CE 211 – Mathematics for Engineers (3 credits)

Instructor: Tarun Rambha
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Timings and Location: TThu 11:30 – 13:00, MS Teams

Course Description:
Einstein once famously said *God does not play dice with the universe*. Even at its face value, that's probably true because the real world's chance events and coincidences only suggest that he must have access to better random number generators :) In this course, we will look at elementary concepts of probability, random variables, and some statistics which will help us model situations fraught with uncertainty. Probability is a fundamental area of mathematics which has numerous applications in engineering, finance, medicine, and sport. No prerequisites are assumed and this part of the course will be self-contained.

Reading Material:
The following books could be used as references. Additional reading material, if any, will be shared during the lectures.

1. Ross, S. (2014). A first course in probability. Pearson.
2. Papoulis, A., & Pillai, S. U. (2002). Probability, random variables and stochastic processes. Tata McGraw Hill.

Assignments:
This part of the course will have two written assignments that will reinforce your understanding of the class material. Students are encouraged to discuss the problems with their classmates but one must write their own solutions. **Plagiarism is strictly prohibited and will be penalized.**[1]

Examinations:
This part of the course will have online quizzes. More details will be discussed later.

Lesson Schedule:
Table 1 lists the topics that will be covered in different lectures. Minor adjustments may be made as the semester progresses.

Table 1: Course Schedule.

CE 211 Probability	
Lecture 1	Introduction and Axioms of Probability
Lecture 2	Laws of Probability and Independence
Lecture 3	Discrete Random Variables - Part I
Lecture 4	Discrete Random Variables - Part II
Lecture 5	Continuous Random Variables - Part I
Lecture 6	Continuous Random Variables - Part II
Lecture 7	Functions and Multivariate Random Variables
Lecture 8	Limit Theorems
Lecture 9	Beyond Expectation
Lecture 10	Statistical Estimation
Lecture 11	All about that Bayes

[1] http://www.iisc.ac.in/about/student-corner/academic-integrity/